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- ☛ S1: (68369) "455"/\$.ccls.
- ☛ S2: (4) S1 and "programmable linear receiver"
- ☛ S3: (1) S2 and "jammer detector"

(12) **United States Patent**
Clocarelli et al.

U.S. Patent No.: US 6,498,926 B1
Date of Patent: Dec. 24, 2002

(54) PROGRAMMABLE LINEAR RECEIVER
HAVING A VARIABLE TUNING POINT

FOREIGN PATENT DOCUMENTS

(75) Inquiries: Steven C. Cleaver, Berkeley, CA
(US) David G. Wootch, San Diego, CA
(US) Ralph E. Kautzman, La Mesa, CA (22)

FOREIGN PATENT DOCUMENTS

OTHER PUBLICATIONS

(23) Assignee: Qualcomm Incorporated, San Diego
Ca 92161

*A Comparison of Multistage Networks for High Order Overlapped ESP/ASAP to Digital Chromatography. Wilson, ILLIE Transactions on Circuits and Systems, vol. 38, No. 2, Feb. 1991.

(*) **Notice:** Subject to any disclaimer, the term of copyright is extended to authorized users.

Transactions on Circuits and Systems, vol. 33, No. 3, 1988.

U.S. 15-00000 0 0000

Primary Encoder—Nippon V
Assemble Decoder—Globe Radio-Phonograph

(22) Filed: Dec. 8, 1987

(24) Attorney Agent or Receiver - Philip A. Westworth, Trust
Director

(2) **FACI** ADMINISTRATIVE AND FINANCIAL (2)204.1: (2)204.2: (2)204.3: (2)204.4

Abstractable Some studies which provide the empirical basis of various methods of reducing human error.

(54) Field of Search 452, 239.1, 2
185, 241.1, 242.1, 245.1, 249.1, 250.1, 2

The receiver modulation process is a coherent based on measurement of the non-linearity in the optical signal from the medium. The process of non-linearity can be measured by

Environ. Biol. Fish. 1994, 35: 143-150

the KKK slope is energy-participating with the KKK slope. The KKK slope is the result of the change in the electron density of the KKK slope on the electron density.

U.S. PATENT DOCUMENTS

The output signal level is automatically adjusted to the input signal level. The output signal level is automatically increased by a predetermined level and the output signal from the receiver is transmitted. The output signal level is automatically adjusted to the input signal level.

425,722	A	2/1989	Chen et al	34
520,722	A	2/1991	Supplemental to 425,722	7
520,726	A	2/1991	Chen et al	34
521,728	A	5/1991	Supplemental to 425,722	34

...the system is designed to be used in a variety of ways. It can be used as a stand-alone system, or it can be integrated with other systems. The system is designed to be used in a variety of ways. It can be used as a stand-alone system, or it can be integrated with other systems.

3,361,427	A	4/10/04	WILLIAMS, J. L. (JANUARY 1904)
4,432,800	A	7/29/04	WILLIAMS, J. L. (JANUARY 1904)
5,432,779	A	7/29/05	WILLIAMS, J. L. (JANUARY 1904)

new signal level. However, in the random conditions in the lower region, thermotaxis gradient due to the thermal increase from the thermal signal. The decrease

5,471,000	A	12/30/90	Smith	estimated	20
5,481,000	A	1/1/90	Black et al.	production	452
5,500,000	A	1/1/90	Black et al.	production	28
5,500,000	A	1/1/90	Black et al.	production	28

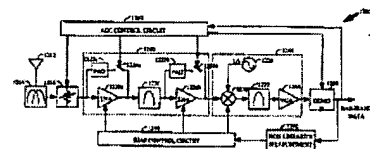
the 1954 slope, the amount of degradation due to such leachability can be determined. This information is then used to adjust the 1954 retention curve of the sandstone and mineral.

5.13.123	A	4/1986	Engelstein et al.	1986	100
5.13.124	A	5/1986	Engelstein et al.	1986	100
5.13.125	A	4/1974	Chen et al.	1974	100
5.13.126	A	9/1986	Widgren	1986	100

provide the requisite level of protection while maintaining power transmission.

(List continued on next page.)

II. Claims, 13 Drawing Sheets



II. **Chlorine**, 12. **Bromine**, 13.

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 IS&R form
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	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current	Ref	Inventor
3	<input type="checkbox"/>	<input type="checkbox"/>	US 6175279 B1	20010116	25	Amplifier with adjustable bias current	330/296	330/285		Ciccarelli; Steven C. et al.
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6134430 A	20001017	28	Programmable dynamic range receiver with adjustable dynamic range analog to digit	455/340	455/232.1; 455/254; 455/337		Younis; Saed G. et al.

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L1: (10) (jamm\$3 near3 detect\$3) and "linear receiver"

L2: (9) 1 and RF

L3: (0) 2 and (LPF and BPF)

L4: (1) 2 and (LPF or BPF)

L6: (5) (jamm\$3 near3 detect\$3) and "programmable linear receiver"

L7: (10) (jamm\$3 near3 detect\$3) and "linear receiver"

L8: (9) 7 and RF

L9: (8) 8 and ("ADC" or "A/D")

L10: (5) 9 and mixer

L11: (5) 10 and filter

L12: (5) 11 and oscillator

L13: (5) 12 and amplifier

L14: (4) 13 and attenuator

L15: (4) 14 and bit

L17: (4) 15 and threshold

L18: (1) 17 and timer

L19: (4) 17 and "power control"

L20: (4) 19 and tim\$3

L21: (1) 20 and IC

L22: (4) 20 and chip

L23: (4) 22 and (detect\$3 near8 jamm\$3)

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SI: (68260) "455"/\$ cals

United States Patent (19)

US06134430A

Younis et al.

Patent Number: 6,134,430

Date of Patent: Oct. 17, 2000

(54) PROGRAMMABLE DYNAMIC RANGE RECEIVER WITH ADJUSTABLE DYNAMIC RANGE ANALOG TO DIGITAL CONVERTER

(76) Inventors: Saad G. Younis, 12767 Redan Ridge Ct., San Diego, Calif. 92130; Seyfollah S. Bejardest, 15280 Overton Rd., San Diego, Calif. 92130; Steven C. Ciccarelli, 714 Sutterworth Ln., Encinitas, Calif. 92024

(21) Appl. No.: 08/997,833

(22) Filed: Dec. 6, 1997

(31) Int. Cl.⁷: H03M 1/08

(32) U.S. Cl.: 455/340; 455/254; 455/337

(58) Field of Search: 455/232.1, 234.1, 455/234.3, 235.1, 236, 237, 238, 240, 341/145, 156, 179

References Cited

U.S. PATENT DOCUMENTS

6,311,331 8/1994 Power 342/142 A

Primary Examiner—Fai Tung

Assistant Examiner—Philip J. Sebeck

Abstract

A programmable dynamic range receiver which provides the required level of performance at reduced power consumption. The EA ADC within the receiver is designed with one or more loops. Each loop provides a predetermined dynamic range performance. The loops can be enabled or disabled based on the required dynamic range and a set of dynamic range thresholds. The EA ADC is also designed with an adjustable bias current. The dynamic range of the EA ADC varies approximately proportional to the bias current. By adjusting the bias current, the required dynamic range can be provided by the EA ADC with minimal power consumption. A reference voltage of the EA ADC can be disconnected when high dynamic range is not required, thereby allowing the low bias current in the EA ADC and supporting circuitry. The dynamic range of the EA ADC is a function of the oversampling ratio which is proportional to the sampling frequency. High dynamic range requires a high oversampling ratio. When high dynamic range is not required, the sampling frequency can be lowered.

22 Claims, 14 Drawing Sheets

BRS form

IS&R form

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	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current	Ret	Inventor
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6134430 A	20001017	28	Programmable dynamic range receiver with adjustable dynamic range analog to digit	455/340	455/232.1; 455/254; 455/337		Younis; Saad G. et al

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- ☞ L1: (10) (jamm\$3 near3 detect\$3) and "linear receiver"
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- ☞ L3: (0) 2 and (LPF and BPF)
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- ☞ L7: (10) (jamm\$3 near3 detect\$3) and "linear receiver"
- ☞ L8: (9) 7 and RF
- ☞ L9: (8) 8 and ("ADC" or "A/D")
- ☞ L10: (5) 9 and mixer
- ☞ L11: (5) 10 and filter
- ☞ L12: (5) 11 and oscillator
- ☞ L13: (5) 12 and amplifier
- ☞ L14: (4) 13 and attenuator
- ☞ L15: (4) 14 and bit
- ☞ L17: (4) 15 and threshold
- ☞ L18: (1) 17 and timer
- ☞ L19: (4) 17 and "power control"
- ☞ L20: (4) 19 and tim\$3

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19 and tim\$3

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	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current	Ref	Inventor
2	<input type="checkbox"/>	<input type="checkbox"/>	US 6498926 B1	20021224	26	Programmable linear receiver having a variable IIP3 point	455/240.1	330/129; 455/234.1; 455/239.1;		Ciccarelli, Steven C. al.
3	<input type="checkbox"/>	<input type="checkbox"/>	US 6175279 B1	20010116	25	Amplifier with adjustable bias current	330/296	330/285		Ciccarelli, Steven C. al.
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 L3: (1) 2 and "jammer detector"
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 L5: (5) (jammm\$3 near3 detect\$3) and "programmable linear receiver"
 L6: (10) (jammm\$3 near3 detect\$3) and "linear receiver"
 L7: (6) 6 and mixer
 L8: (5) 7 and RF
 L9: (2) 8 and "A/D"
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8 and "A/D"

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	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current X	Reti	Inventor	S
1	<input type="checkbox"/>	<input type="checkbox"/>	US 6498926 B1	20021224	26	Programmable linear receiver having a variable IIP3 point	455/240.1	330/129; 455/234.1;		Ciccarelli; Steven C. et al.	<input checked="" type="checkbox"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5361072 A	19941101	19	Gated FMCW DF radar and signal processing for range/doppler/angle de	342/133	342/175; 342/196;		Barrick; Donald E. et al.	<input checked="" type="checkbox"/>

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7 and RF

BRS form ISIR form Image Text HTML

	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current X	Reti	Inventor	S
1	<input type="checkbox"/>	<input type="checkbox"/>	US 20040142670 A1	20040722	15	Dynamically programmable receiver	455/214			Ciccarelli, Steven C.	<input checked="" type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	US 6498926 B1	20021224	26	Programmable linear receiver having a variable IIP3 point	455/240.1	330/129; 455/234.1;		Ciccarelli, Steven C. et al.	<input checked="" type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	US 6175279 B1	20010116	25	Amplifier with adjustable bias current	330/296	330/285		Ciccarelli, Steven C. et al.	<input checked="" type="checkbox"/>
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